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WORK-RELATED ISSUES FACING NURSE ANESTHETISTS DURING

DEPLOYMENT ON A MILITARY OPERATION OTHER THAN WAR

Betsy Smith Majma

APPROVED:

Martha Turner   19 May 2000
Chair- Dr. Martha H. Turner, Colonel, USAF, NC   Date

Maura McAuliffe   19 May 2000
Maura S. McAuliffe, CRNA, Ph.D.   Date

Paula Goodman   19 May 2000
Paula Goodman, CRNA MSN, Major, USAF, NC   Date

APPROVED:

Fay G. Abdellah   9/25/01
F.G. Abdellah, Ed.D., Sc.D., RN, FAAN   Date

CURRICULUM VITAE

Name: Majma, Betsy S.

Permanent Address: 6812 Orchard. Dr. Ocean Springs, Mississippi. 39564

Degree and Date to be conferred: Master of Science in Nursing, October 2000.

Date of Birth: October 13, 1958.

Place of Birth: Providence, Rhode Island

Secondary Education: Ursuline Academy, Dallas, Texas, May 1976.

Collegiate Institutions Attended:	Dates	Degree	Date of Degree
Stephen F. Austin State University, Nacogdoches, Texas	1976-1978		
Dallas County Community College District Dallas, Texas	1979-1982	ADN	May 1982
Texas Women's University Dallas, Texas	1982-1985	BSN	December 1985
San Antonio College San Antonio, Texas	1987-1989		
University of Texas at San Antonio San Antonio, Texas	1987-1990		
University of Texas Health Science Center San Antonio, Texas	1990-1995	MSN	December 1995
Uniformed Services University of Health Sciences Bethesda, Maryland	1998-2000	MSN	October 2000

Major: Nurse Anesthesia.

Minor: 1. Critical Care Nursing, 2. Teaching.

Professional Positions Held:

Staff nurse medical-surgical ward post critical care internship at Presbyterian Hospital, Dallas, Texas from May 1982 to January 1985.

Staff nurse telemetry-oncology unit post intensive care float pool at Robert H. Dedman Memorial Hospital in Dallas, Texas from February 1985 to Sept. 1986.

Staff nurse cardiothoracic-telemetry ward from September 1986 to December 1987, then Cardiac Care Unit from December 1987 to December 1995, both at Wilford Hall Medical Center- San Antonio, Texas.

Assistant Nurse Manager of Cardiac Care Unit, Wright Patterson Medical Center in Fairborn, Ohio from December 1995-May 1998.

Staff Nurse Anesthetist at Keesler Medical Center in Biloxi, Mississippi beginning November 2000.

DISCLAIMER STATEMENT

Department of Defense

ABSTRACT

The purpose of this research was to describe the work-related issues facing nurse anesthetists deployed on a military operation other than war (MOOTW), and to identify strategies for improvement to formal education and training programs. Currently there is an absence of literature about the role of nurse anesthetists during a MOOTW. The study is important to the military because nurse officers will continue to be deployed not only as anesthetists, but also as leaders on humanitarian, disaster relief, and peacekeeping or peacemaking missions; which are all components of MOOTW missions. It is equally important to nurse anesthetists because they are integral to providing anesthesia and pain management to soldiers and civilians in the perioperative period. Grounded theory methods were used in this study to answer the research questions and to develop new theory. Purposive sampling with a snowball technique was used to obtain participants who had been on a MOOTW during the last five years. Data collection was done through interviews and demographic questionnaires. Analysis of interview data, using the constant comparative method, was done manually. Nine themes were extracted from the data: Communication, flexibility, environment, equipment, cultural issues, personal issues, non-anesthesia roles, training, and recommendations for future deployments.

Key Words: **military operations**   **humanitarian assistance**   **nurse anesthetist**
deployment   **military nursing**   **grounded theory**   **roles**   **anesthesia**

WORK-RELATED ISSUES FACING NURSE ANESTHETISTS DURING

DEPLOYMENT ON MILITARY OPERATION OTHER THAN WAR

by

BETSY SMITH MAJMA

THESIS

Presented to the Graduate School of Nursing Faculty of

The Uniformed Services University of the Health

Sciences in Partial Fulfillment of the

Requirements for the

DEGREE OF MASTER OF SCIENCE IN NURSING

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

OCTOBER 2000

PREFACE AND/OR FORWARD

This research was conducted strictly as a result of school requirements to do a thesis. It was a qualitative study that examined the work-related issues of active duty Air Force certified registered nurse anesthetists (CRNAs) while deployed on military operations other than war (MOOTW) since 1994. Although many negative issues were identified, there were some positive ones and, of surprise to the researcher, the majority of the participants said they would not mind deploying again. This study is applicable to the military and to nurse anesthetists who may be deployed on a MOOTW in the future.

DEDICATION AND/OR ACKNOWLEDGMENT

First and foremost I'd like to thank my husband who never felt like less than a man by staying at home to manage those traditionally female roles. I would have starved to death, or at the very least never have been able to go to school without his support and tolerance of the time I spent in this program rather than at home with him. To my son, I'd like to say "OK, NOW I can play with you" and sorry I was so busy for such a long portion of your young life. As you get older, I hope you will remember the sacrifices we all made to achieve a better life in the future. I certainly hope that these sacrifices motivate you to do your best along the way so that you don't also have to go to school in your forties.

A special thanks to Col Martha Turner, who had the near impossible task of guiding this quantitative person through a qualitative project. I can't thank Major Paula Goodman enough for her generosity in giving me the time off when I needed it, to get this project done. She has been, single-handedly, the kindest, most understanding, and facilitative person in the anesthesia program.

To my parents, thanks for the loan. It helped enormously during these grueling two and a half years, while my husband has been unemployed, to deal with several moves around the country, manage domestic affairs, raise our son, and feed me.

Thanks to the juniors who have just replaced me on the bottom of the anesthesia totem pole.

TABLE OF CONTENTS

A: Guiding Questions for the Interview

B: Demographic Questionnaire

C: Timeline

D: Letter to Potential Participants

E. Letter from General Stierle

LIST OF TABLES

APPENDIX A

Guiding Questions for the Interview

1. Describe the name and type of deployment you were on (e.g. humanitarian mission during Operation Sea Signal, peacekeeping In Operation Desert Storm, humanitarian refugee medical support in Operation Pacific Haven)

2. Where was this deployment located and what the geographical and cultural environment was like?

3. What were your accommodations like (e.g. tents, hotel, connex boxes)?

4. Describe the types of patients that you cared for.

5. Describe your role as a nurse anesthetist:

    a. Types of cases performed

    b. Number of cases per day

    c. Type of anesthesia administered

    d. Describe the differences in how you administered anesthesia (compared to non-deployed anesthesia administration)

6. a. Describe the field anesthesia training you received before deployment. Did you feel like you were adequately trained for the mission you were deployed on in terms of anesthesia administration, machinery or equipment?

    b. What military training did you receive (such as Battlefield Nursing or Combat Casualty care Course) before the deployment?

7. What non-nursing or nursing roles, outside of the anesthesia arena did you perform (if there were any)?

8. What were some of the work-related issues you had to face while on your deployment?

9. Did your deployment influence your personal or professional life after arriving back home (post deployment)? Describe your experience.

10. If you could make changes to improve future deployments, what would you do?

11. How might CRNAs better prepare themselves for MOOTW deployments?

12. Were there any questions that I did not ask that would have captured the essence of your deployment?

APPENDIX B

Demographic Questionnaire

**The answers for #1 to #3 should relate to the <u>time when you were deployed</u>.

1. Name:

2. Age:

3. Rank:

    If you were promoted during the deployment, please make note of that

4. Position at work before deployment (e.g. staff CRNA, Chief CRNA, Flight

    Commander, Chief Nurse):

5. Before your deployment, what did you consider to be your area of expertise within

    anesthesia:

6. Number of years of **total** nursing experience since graduation from a basic nursing

    program:

7. Number of years of **Anesthesia** experience since graduation from an anesthesia

    program:

8. How many **total** times have you been deployed?

9. How many **total** years have you been in the military **as a nurse** (including active and

    reserve time)?

10. Did you have any military training before the deployment?

APPENDIX C

Task List and Time Line for Research Project: Following Proposal Approval

Task/Activity	1	2	3	4	5	6	7	8	9	10	11	12
1. Obtain IRB Approval	-------											
2. Collect data	----------------------											
3. Analyze Data		------------------------										
4. Prepare Draft Report				---------								
5. Obtain Committee Review or Draft					----							
6. Prepare Final Draft						---						
7. Hold Thesis Defense							-----					
8. Make Revisions as Needed									----------			
9. Obtain Signatures of Committee Members							-----					
10. Submit thesis for binding											----------	

APPENDIX D

Major Betsy S. Majma
1429 Sunset Dr.
Fairborn, OH 45324
937-754-9330

Dear "CRNA's name",

My name is Major Betsy S. Majma. I am a graduate student in the anesthesia program at the Uniformed Service University of Health Sciences. I am looking for participants for a research study (thesis and graduation requirement). My thesis is titled "The work-related issues facing CRNAs during deployment on military operations other than war".

For this study, I am seeking CRNAs who were on active duty when deployed to a military operation other than war (MOOTW) within the last 5 years. MOOTWs include, but are not limited to, humanitarian, peacekeeping, disaster relief, and refugee support missions. If you meet these criteria and are willing to share your experiences, please contact me. I will send you a short demographic questionnaire and consent form (both to be returned in a postage-paid envelope), and a list of some questions that we will discuss in later interview. The interview will audiotaped for transcription afterwards, will take about 30 minutes, and be conducted at date and time convenient for you. Participation is completely voluntary and you may withdraw from the study at any time. Your privacy and anonymity will be maintained throughout the study if you choose to participate.

The information obtained from this study will hopefully yield results that can be applied to formal education or training programs that may better prepare CRNAs for a deployment. Although you may not personally see a benefit during your military career, your participation may prove beneficial to other military members and CRNAs.

If you have any questions or would like to participate in the study, please call me at 937-754-9330. My e-mail address is majmaj@donet.com. Thank you.

Betsy S. Majma, Maj, USAF, NC
Graduate Anesthesia Student at Uniformed
Services University of the Health Science

Running Head: NURSE ANESTHETIST DEPLOYMENT ISSUES

Work-related Issues Facing Nurse Anesthetists During Deployment on a Military

Operation Other Than War

Betsy S. Majma, MSN, CNS

Uniform Services University of Health Sciences (USUHS)

Graduate School of Nursing

Bethesda, MD

October, 2000

CHAPTER I: INTRODUCTION

Background

There has been a major shift in military deployments this past decade from

providing support for wartime missions to primarily providing peacetime humanitarian,

peacekeeping and peacemaking missions and disaster relief. The Chief of Staff for the

United States Air Force, General Michael Ryan (1998), and other senior leadership, noted

in "Global engagement: A vision for the 21st century" that now and in the future, multiple

humanitarian and "lesser" operations will be the norm, as opposed to yesterday's

approach where humanitarian and "lesser" operations were a sideline. Collectively, these

humanitarian or non-war missions are referred to as "military operations other than war"

or MOOTW (Joint Chiefs of Staff, 1994).

As military members continue to train for wartime contingencies, they must also be

trained to engage in these MOOTWs as well. According to reports from the Office of the

Assistant Secretary of Defense, there were 55 Department of Defense (DOD)

Humanitarian and Civic Assistance (HCA) projects in 1995 and 1996 alone. These

programs are one component of MOOTW. They will continue to be useful and valuable

in supporting military engagements, promoting operational readiness, and providing

social, economic, and medical benefit to host country populations (Ebling, 1997).

Since the mid-1970s, following the end of Vietnam conflict, it has been possible for

active duty Air Force nurse anesthetists to finish an entire career without having been

deployed. Now, the probability of being deployed on one or several missions is reported

to be quite high. This parallels a literature search that revealed a steep increase in journal

articles addressing MOOTW and humanitarian assignments, for officers and enlisted personnel of all military branches, since the early to mid-1990s.

The roles, working conditions, types of cases, standards, supervisors, schedules, supplies and equipment that certified registered nurse anesthetists (CRNAs) will experience in the field may be a radical change from what they are accustomed to dealing with on a daily basis. While there was some literature devoted to training deficiencies with equipment (unfamiliarity), the mission, and military operations (Tsoulas, 1992; United States General Accounting Office, 1992; Wiener, 1986), much less was available on the military training and roles of CRNAs while deployed on MOOTW missions.

Olsen (1997) noted that medical technology has "improved peacetime, urban perioperative care but has carried the Air Force's training farther from operational environments"(p. 75) and also cited that unfamiliarity with dated equipment resulted in inadequate medical readiness that is potentially lethal. A United States Marine Major General serving during the Restore Hope operation in Somalia commented, "We aren't prepared for these operations very well" (Yates, 1997, p. 51). This was supported by a Special Forces Lieutenant Colonel, who informed his troops to "anticipate different environments for which they would have to perform duties for which they had little or no training" (p. 51). Insufficient training, for example, with unfamiliar anesthesia machines could lead to critical complications. This is just one facet of a host of potential problems associated with a MOOTW deployment.

Many references were made in the literature regarding generic MOOTW or humanitarian mission issues; boredom, language barriers, inability to use skills, contamination of the surgical supplies, cultural differences, etc. (Samuels, 1997; Smith &

Smith, 1995; Vane & Singleton, 1996; Zdrowski, Dekker, & Vogelsang-Watson, 1996). The issues specifically facing nurse anesthetists during MOOTW deployments have not been described.

A deployment can be very stressful (Bell, Roth, & Weed, 1998; Messacar & Kendall, 1998) for many reasons; family separation, broken routines, isolation, sexual harassment. Added stress can be due to training deficiencies, equipment problems, and other unknowns. Change is a well-known cause of stress (McGovern & Rodgers, 1986; Rantz & Miller, 1987). Changes can create a quandary, and can potentially negatively affect job performance and morale. As military members, we are expected to give a 100% effort, but that could be quite energy consuming in the presence of certain obstacles which may impede job performance (Deming, 1986).

To be an effective military force, we must be fully informed, trained, and prepared for the MOOTW as well as the war missions we may ultimately face (Lillibridge & Burkle, 1994). Samuels (1997) notes that the modern political and military climate will certainly result in an increased frequency of humanitarian missions. To improve medical readiness preparation of CRNAs, and mission success, we must first identify the issues that face our CRNAs deployed on MOOTW missions.

Purpose of the Study

The purpose of this study was to describe the work-related issues encountered by CRNAs during deployment on military operations other than war, and to begin to develop responses applied to formal education and military exercises.

Research Questions

1. What is the role of the CRNA on a MOOTW mission?

2. What issues are encountered by nurse anesthetists during deployment on

MOOTW missions?

3. How do those issues influence their usual job performance?

4. What educational and training needs can be identified for CRNAs?

Definitions

1. Deployment. To deploy means to spread persons or forces out over an area.

Deployment of military personnel, either active duty or reserve forces, involves the

notification, departure, travel, and arrival to some destination where temporary living

quarters and work environments are established for the purpose of supporting a defined

military mission. (Wright Patterson 74th Medical Group, 1996).

2. Military operations other than war (MOOTW). The Air Force defines MOOTW

(Department of the Air Force, 1996) as operations that encompass the use of military

capabilities across the range of military operations short of war. These military actions

can be applied to complement any combination of the other instruments of national

power and occur before, during, and after war. The MOOTW medical operations

guidance is found in the June 1995 Joint Chiefs of Staff Joint Pub 4-02, 4-02.1, and 4-

02.2. The Army (1998), as retrieved on an Internet web page, defines MOOTW as

"military activities during peacetime and conflict that do not necessarily involve armed

clashes between two organized forces".

Joint Pub 3-07 (Joint Chiefs of Staff, 1995) identifies 16 types of MOOTW, to

include: arms control, combating terrorism, Department of Defense (DOD) support to

counter drug operations, enforcement of sanctions, maritime intercept operations,

enforcing exclusion zones, ensuring freedom of navigation and flight, humanitarian

assistance, military support to civil authorities, nation assistance, support to counterinsurgency/noncombat evacuation operations, peace operations, protections of shipping, recovery operations, show of force operations, strikes and raids, and support to insurgency. Joint Pub 4-02 provides the framework and lends clarity to the medical HA and HCA programs.

3. Humanitarian assistance (HA). Programs conducted to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property. Humanitarian assistance provided by US forces is limited in scope and duration. The assistance provided is designed to supplement or complement the efforts of the host nation civil authorities or agencies that may have the primary responsibility for providing humanitarian assistance (Joint Chiefs of Staff, 1997).

4. Humanitarian and civic assistance (HCA). Assistance provided in conjunction with military operations and exercises, and must fulfill unit training requirements that incidentally create humanitarian benefit to the local populace. HCA programs are provided under Title 10 US Code Section 401. In contrast to emergency relief conducted under HA operations, HA programs generally encompass planned activities (Joint Chiefs of Staff, June 1995). A medical readiness training exercise (MEDRETE) is a term synonymous with medical HCA. Medical HCA is now the more frequently used term by the joint service doctrine effort to promote continuity in term usage (Ebling, 1997).

5. War. A state of undeclared or declared armed hostile action characterized by the sustained use of armed force between nations or organized groups within a nation

involving regular and irregular forces in a series of connected military operations or

campaigns to achieve vital national objectives (Department of the Air Force, 1996)

6. <u>Certified registered nurse anesthetist (CRNA).</u> A CRNA is a nurse who has

completed an accredited program in nurse anesthesia and is certified by the American

Association of Nurse Anesthetists Council on Accreditation. All Air Force CRNAs,

practicing as such, are officers. Only Air Force CRNAs were interviewed for this study,

although the Army and Navy also utilize CRNAs on MOOTW deployments.

7. <u>Issue</u>. Webster's Concise Reference Library (1996) defines the noun form as an

"outcome or result; point of controversy; offspring" (p. 53). The point of controversy or

debate is also the point at which an unsettled matter is ready for a decision. Issue is

operationally defined as a matter, point of controversy, or situation that arises from the

lived experience of MOOTW deployments; the issues can be either positive or negative

outcomes of the MOOTW.

<div align="center">

<u>Assumptions</u>

</div>

1. Deployment may generate feelings of anxiety and stress.

2. The deployed environment will be lacking certain familiar luxuries from home
   like flushing toilets, warm showers, indoor air conditioning, etc.

3. The geography/climate may be extreme.

4. The work environment will be unfamiliar.

5. Personnel may be unfamiliar. Relationships and trust must be rapidly developed.

6. Regions in need of military assistance are not likely to be in the United States, and
   a language barrier may be present.

7. CRNAs will be of different race, sex, rank, come from different bases, have

different levels and years of experience.

Limitations

Anticipated limitations to this study include:

1. Interviews were conducted by telephone (except for three, which were mailed

in) and therefore non-verbal cues from the interview process were lost.

2. The study was limited to the information provided and voice quality of the

participants.

3. The study was limited to the descriptions of the CRNAs who participated in the

study.

4. This study interviewed only Air Force CRNAs who were on active duty at the

time of deployment, dating back to 1994, and solely on MOOTW missions.

Methodology-Conceptual Framework

This was a descriptive qualitative study. Grounded theory was chosen as the

method to guide the study. Grounded theory is a qualitative research method used to

investigate "social processes that present within human situation" (Streubert & Carpenter,

1995, p. 145). This method has been used by nurse researchers to investigate issues

relevant to nursing, and it leads to the development of other theories in nursing.

In grounded theory (Denzin & Lincoln, 1994; Strauss & Corbin, 1990; Streubert &

Carpenter, 1995), the conceptual framework is developed from the study data rather than

previous research. The data are the main themes (issues, practices, behaviors, beliefs,

and attitudes) derived from the social scene rather than describing the unit under study.

Grounded theory is based on the concept of symbolic interactionism, which Streubert and

Carpenter define as a "philosophical belief system based on the assumption that humans learn about and define their world through interaction with others" (p. 317).

In grounded theory, analysis of data begins with the first set of data collected. Further collection of data is modified based on that analysis. The goal of grounded theory research is to uncover theoretical explanations about some phenomena. A facet unique to grounded theory is that the initial research question may change as the investigation ensues. Hutchison (1986) notes that a truly accurate research question is impossible to ask prior to any grounded theory study. The questioning continues until saturation occurs (Streubert & Carpenter, 1995).

Summary

There is currently a scarcity of literature available regarding nurse anesthetists in a MOOTW environment, even though there has been a substantial increase in documentation of MOOTW deployments with indications that these type of deployments will not only continue to occur, but may increase in frequency. It is imperative to identify the issues facing nurse anesthetists deployed on such missions in order to better prepare them for a MOOTW deployment.

CHAPTER II: LITERATURE REVIEW

Introduction

Before the advent of humanitarian or MOOTW missions, anesthesia was

administered during wartime when such events called CRNAs away from home.

Barton and Beeson (1997) wrote an eloquent article on wartime anesthesia spanning

many centuries covering issues from 1500 B.C., the Crimean War, the Civil War, World

Wars I and II, the Korean and Vietnam conflicts, the Grenada and Panama missions, and

ending with the Persian Gulf War. Wartime anesthesia-related issues included: Lack of

anesthesia drugs or services, high mortality rates due to guessing gas mixtures, high

anesthetic concentrations in the ambient air, risking of life on the frontline, doing 30

anesthetic cases per day, fixed doses of morphine that led to respiratory depression, lack

of available oxygen, lack of anesthetic equipment for infants and children, lack of

standardization of equipment, debilitating effects of heat and humidity, and a lack of

knowledge of mechanisms of injury. Fortunately, research has led to great improvements

in technology and knowledge, and wartime anesthesia has, for at least the last two

decades, been substituted by anesthesia administration during MOOTW missions.

The United States has a long history of providing humanitarian assistance after

armed conflicts and disaster; since the collapse of the Soviet Union, the United States has

been less involved in war and increasingly involved with in military operations other than

war (Reed, Martino, Eyestone, & Pugh, 1998). These assistance missions are important

for maintenance of peace and security in today's world. "United States doctrine has held

that MOOTW will assume a larger role in military deployments and the medical planning

necessary to support them" (Newmark & France, 1998, p. 278). "According to national

security policy, emergency humanitarian assistance will be an essential capacity of US forces in the 21st century" (Sharp, Yip, & Malone, 1994, p. 386). Assuming that statement to be true, it is clear that nurses will continue to be deployed, and therefore, issues surrounding those deployments will be present. The issues surrounding these MOOTW missions can be broken down into three broad categories: a. professional, leadership, and work-related; b. the foreign arena of cultural and environmental diversity; c. personal, psychological, and activities of daily living. Concepts inherent in the experience of deployment; including stress, change, and total quality management, will also be discussed and presented.

<div align="center">Professional, Leadership, and Work-Related Issues</div>

Little documentation exists that describes the issues confronting CRNAs in the MOOTW environment, either from a personal or professional perspective. Olsen (1997) describes the paradox of anesthesia training in which providers are trained in technologically superior arenas that take anesthesiologists (doctors) further and further from the operational environments most likely to be encountered upon deployment. He noted that the inadequate medical readiness and training deficit of using unfamiliar equipment and being exposed to field hospital limitations was both costly and potentially lethal. "Without training on this dated equipment, the standard of care given to our forces will suffer" (p. 75). This training must occur before a crisis or adverse outcome develops. Sharp et al. (1994) also noted that few military providers have any humanitarian assistance training such as diagnosis and management in field conditions, medical practices and customs of host nations, displaced or refugee populations, and large immunization campaigns.

Vane and Singleton (1996) assessed some work-related differences between American, German, and British anesthesia providers in Berlin. Most problems revolved around using unfamiliar equipment, gases in different colored tanks, cardboard sharps containers, low-set electronic-eye triggered scrub sinks, explosive and carcinogenic sterilizers, and pharmaceutical language differences.

Working conditions were affected on the MOOTW mission to Croatia 'Operation Provide Promise' (Zdrodowski et al., 1996). Problems included; tent damage due to a harsh winter, sand blowing into the operating rooms, intermittent artillery fire, lack of needed supplies, and "daily cleaning of the bird droppings above and around our OR" (p. 29). Equipment interfacing caused some difficulties, but supply acquisition was the most bewildering problem; some supplies took weeks or months to arrive, transportation of the supplies was difficult, and there were numerous customs inspections and forms (Smith & Smith, 1995).

<div align="center">Foreign Arena Issues</div>

These issues include those related to the foreign cultural and geographical environment and can be some of the more difficult problems to deal with; changing people and terrain are not accomplished as easily as, for example, enhancing communication or correcting supply deficiencies.

Rumbaugh (1998) reviewed Operation Pacific Haven, which provided medical support for Kurdish evacuees to Guam. He noted difficulties with cultural mores, social norms, language barriers, and problems with female patient/male practitioner and Kurdish men taking direction from female medical providers. Another significant

problem was a lack of coordination among the many organizations involved in the relief effort, and the transportation and dispersion of a large volume of supplies.

Smith and Smith (1995) and Zdrodowski et al. (1996) described their challenges during the Croatian deployment. The most common problem was the language barrier; soldiers were from 19 different countries. Ironically, the only cultural problem encountered was during anesthesia administration; preconceived ideas about the safety and effectiveness of spinal anesthesia led to resistance or refusal for this method of anesthesia. Zdrodowski et al. (1996) also described the serious adjustments in thinking the surgical personnel had to make when they encountered limited supplies and equipment that was not "state-of-the-art" (p. 32).

Yates (1997) observed some interesting obstacles on MOOTW missions: "Delivery of humanitarian aid was disrupted when automobiles driven by the media wove in and out of the convoys" (p. 56). He goes on to say that the media once again interfered when they met the Marines coming ashore at night in Somalia with a bank of bright camera lights. While these examples have nothing directly to do with CRNAs (unless the Marines were ambushed and wounded), they are examples of unanticipated issues that may impact the success of a MOOTW mission.

The problems noted with Operation Sea Signal in Guantanamo Bay, Cuba (Samuels & Sommer, 1997) taught the United States Navy a lesson in how to manage a massive population of migrants and refugees. This deployment had a stronger emphasis on community health (communicable diseases like tuberculosis and human immunodeficiency virus [HIV] were common) than surgical intervention. Newmark and France (1998) also noted smaller role for surgical care in a MOOTW, this time for

soldiers, in Operation Desert Storm in Saudi Arabia. There was no mention in either

article as to what the surgical teams did when surgery was not being done.

Samuels and Sommer (1997) identified specific geographical problems. In Cuba,

the staff and most everyone else were subjected to harsh environmental conditions with

extremes of heat and humidity. Maternal dehydration, insufficient weight gain, and

hyperemesis gravidarum was significant. Boredom and free cigarettes caused many

migrants to pick up a new smoking habit. Regarding the staff, the authors noted that a

lack of humanitarian assistance training led to poor communication, poor coordination,

misunderstandings of the culture and their customs, and a "number of mistakes that lent

support to the climate of mistrust that already existed" (Samuels, 1997, p. 192).

<u>Personal, Psychological, and Activities of Daily Living Issues</u>

As noted earlier, personnel have had to deal with issues such as challenging

weather, damage to their tents, intermittent artillery fire, cultural and language diversity,

and exposure to communicable diseases. Owen and Macmillan (1998) assessed the

MOOTW deployment to Croatia in 1996, which specifically analyzed the morbidity and

loss of working time of the deployed personnel. They observed a different set of

problems to those experienced in conventional warfare. Almost half (49%) of the time

lost was due to injuries and orthopedic problems sustained off-duty. Other significant

problems included athlete's foot and fungal infections common to MOOTW in a

Mediterranean summer climate. Most sporting related injuries were due to rudimentary

outdoor equipment. Reed et al. (1998) in their investigation of 16,000 records from

Zagreb, Croatia during Operation Provide Promise, further supported this study in noting

that few injuries were war-related and most (45%) were orthopedic surgical cases. "Only

85 of the 4,612 patients were treated for war-related injuries" (p. 417). War-related operations accounted for 20% (n=106) and non-war-related operations accounted for 80% (n=432) of the total operations performed.

Several studies noted boredom (Bartone et al., 1998; Zdrodowski et al., 1996) and isolation, powerlessness, sexual discrimination and harassment (Bartone et al., 1998; Bell et al., 1998) to be a pervasive problem a MOOTW environment. Other psychosocial issues include the presence of additional stress, a multitude of changes, and concern regarding the ability to do the job required.

<u>Concepts Inherent in the Experience of Deployment</u>

Stress is a pervasive problem in a wartime or MOOTW environment. Selye (1976), in his theory of stress and adaptation wrote that "stress is a physiologic phenomenon rooted in biologic processes…and is essentially reflected by the rate of all the wear and tear caused by life"(p. xvi). Men and women alike experience it. Several studies have pointed to helplessness and powerless as a special stressor in peacekeeping operations (Bartone, Adler, & Vaitkus, 1998; Bell, Roth, & Weed, 1998).

Probably the most common stressor is family separation (Bartone et al., 1998; Bell, et al., 1998; Messacar & Kendall, 1998). Noted stressors for women included guilt of leaving children behind, viewing mutilated bodies, sexual harassment and/or rape, gender discrimination, and physical discomfort (Bell, et al., 1998). The study by Bartone et al. (1998) rated the following items as causing the most stress: family separation, ambiguity of role and mission, boredom, powerlessness, isolation, and the threat of danger. Their results showed that stress was related to depression, psychiatric symptoms, and morale problems.

Change is a term that nearly always breeds anxiety (McGovern & Rodgers, 1986). "People are afraid of change because it makes them feel insecure and may be perceived as personally threatening" (Rantz & Miller, 1987, p. 888). People resist change to avoid the inevitable anxiety. A deployment creates a whole series of changes that are likely to overwhelm many people; new environment, new leaders, new living arrangement, new everything!

Most important to this study was the managerial philosophy of total quality management (TQM). Masters and Masters (1993) describe the TQM principles outlined by the pioneer in this field, Dr. Deming (1986). The 14 points or core principles he identified are the cornerstone of developing a fully functional and successful operation. The concepts were originally designed for the business and industrial sector, but have been used by medical administrators and leaders with great success (Dees & Garcia, 1995; Gillem, 1988; Mathias, 1992). The key point is: To have an optimal outcome, systems, processes, and barriers must be studied to eliminate rework and waste, and personnel must be supplied with the tools and training to the their job (Deming, 1986). If issues facing CRNAs are identified, then tools or training methods can be developed to minimize adverse effects and maximize the successful effects.

<u>Summary</u>

The major problems or issues identified on medical MOOTW missions have been related to language barriers, boredom, isolation, harsh environments, stress over family separations and numerous changes in routine. Mission success depends, in part, on the training and education one receives prior to deployment to a region. Identification of

issues specific to CRNAs can lead to a greater understanding, and the development of

educational and practical training programs.

CHAPTER 3 METHOD OF INQUIRY

Introduction

In this chapter, the method of inquiry for grounded theory research, the sample and setting, data collection with interview questions, data analysis, issues of trustworthiness and rigor, and human subject consideration/Internal Review Board (IRB) are presented. The guiding questions, demographic questionnaire and the results of data collection, and time-line for research completion are presented in appendices A-D.

Method of Inquiry: General

"Qualitative research is a systematic, subjective approach used to describe life experiences and give them meaning" (Burns & Grove, 1993, p. 777). Qualitative research facilitates examination of a much broader scope of realities and phenomenon than is usually possible with quantitative research. Whereas the goal of quantitative research is to provide numbers and statistics, qualitative research reaches beyond the numbers and delves into the individual experiences and broadens the scope of understanding. Burns and Grove describe qualitative research as a holistic method by which we gain insight into meanings through exploring the complexity of a phenomenon.

Grounded theory is one of several methods utilized to conduct qualitative research. Glaser and Strauss, as cited in Morse & Field (1995) and Munhall & Oiler (1988) pioneered the concept of grounded theory in 1967; it delineates a specific style of data collection and analysis by identifying basic social processes. Streubert and Carpenter (1995) describe five steps in the grounded theory process: a. collection of empirical data; b. concept formation; c. concept development; d. concept modification and integration; and e. production of a research report. Streubert and Carpenter state that grounded theory

is a form of field research that explores and describes phenomena in naturalistic settings; it examines the practices, behaviors, beliefs and attitudes of people and groups as they function in their life.

Streubert & Carpenter (1995) note the philosophical framework for grounded theory is based on symbolic interaction, which is one theory of human behavior. Symbolic interaction describes a social conduct based on personal interpretations of symbols in one's life and is an outcome of this interpretation. Glaser and Strauss, as cited in Morse & Field (1995) and Munhall & Oiler (1988) applied symbolic interaction theory to create the method of research now known as grounded theory in order to investigate social processes within human intercommunication. A unique characteristic of grounded theory methodology is that data collection and analysis occur simultaneously while identifying trends in behavior or responses. Grounded theory is a circular method that requires the researcher to collect, code, and analyze data from the beginning of the study; ongoing analysis may change the focus and allow the researcher to pursue other leads (Munhall & Oiler, 1988). The data gathered are used to form new theory.

Quantitative studies are conducted to test theory. Some qualitative studies are conducted to develop theory. Qualitative research methods are used when little information is available regarding the phenomenon or problem being researched (Burns & Grove, 1997). Grounded theory was specifically chosen as the qualitative research method for this study as it will facilitate the identification of issues facing nurse anesthetists.

The process of grounded theory is detailed and rigorous. Grounded theory methodology typically utilizes detailed interviews and/or direct observations of the

sample. In this study the researcher interacted with the participants in an interview format. Samples are generally small and purposive in order to acquire rich data. Theoretical sampling (Strauss & Corbin, 1990) in grounded theory is "aimed at identifying, developing, and relating concepts" (p. 177) to the evolving theory and sampling is based on those concepts that are repeatedly present or noticeably absent. Theoretical sampling involves collecting dense or rich data and obtaining more participants as the data dictates. Data collection stops when saturation occurs. Streubert and Carpenter (1995) define saturation as a "repetition of data obtained during the course of a qualitative study...signifies completion of data collection on a particular culture or phenomenon" (p. 317).

Interviews were conducted and data collection and analysis occurred simultaneously: This is fundamental to grounded theory according to Chenitz and Swanson (1986) and Strauss and Corbin (1990). Data were categorized and coded in stepwise fashion, then tested and compared to incoming data. Critical interpretation of the data may dictate that further interviews are conducted to ensure saturation of each category has been documented. It is for this reason that one cannot determine the sample size in advance. Finally, theoretical ideas emerge from the on-going analysis of coding, categorizing, memoing, and theoretical sampling.

<u>Method of Inquiry: Applied</u>

Grounded theory offers an ideal approach to collect, organize, and analyze data for qualitative research in military nurse anesthesia practice; to include exploring the work-related issues facing CRNAs during deployments on humanitarian or MOOTW missions. Use of this method provided extensive data regarding the practice of military nurse

anesthesia.   Interviews were conducted with Air Force CRNAs who had been deployed on these missions. The proposed question guide for the interview is listed below and in Appendix A. The demographic questionnaire is in Appendix B and the data from the demographic questionnaire are in Appendix C. The study timeline is in Appendix D.

<u>Guiding Questions</u>

1. Describe the name and type of deployment you were on (e.g. humanitarian mission during Operation Sea Signal, peacekeeping In Operation Desert Storm, humanitarian refugee medical support in Operation Pacific Haven)

2. Where was this deployment located and what was the geographical and cultural environment like?

3. Describe the types of patients that you cared for.

4. Describe your role as a nurse anesthetist:

    a. Types of cases performed

    b. Number of cases per day

    c. Type of anesthesia administered

    d. Describe the differences in how you administered anesthesia (compared to non-deployed anesthesia administration)

5. Describe the field anesthesia training you received before deployment:

    a. Did you feel like you were adequately trained for the mission you were deployed on in terms of anesthesia administration, machinery or equipment?

    b. What military training did you receive (such as Battlefield Nursing or Combat Casualty care Course) before the deployment?

6. What non-nursing or nursing roles, outside of the anesthesia arena did you
    perform (if there were any)?

7. What were some of the work-related issues you had to face while on your
    deployment?

8. Did your deployment influence your personal or professional life after arriving
    back home (post deployment)? Describe your experience.

9. If you could make changes to improve future deployments, what would you do?

10. How might CRNAs better prepare themselves for MOOTW deployments?

There were two questions added after several interviews as a result of the data

analysis: (a) What were your accommodations like?; (b) Were there any questions that I

did not ask that would have captured the essence of your deployment?

Sample and Setting

A purposive sample of CRNAs in the United States Air Force, who have been

deployed on a humanitarian or MOOTW mission in the last five years, was utilized for

this study. The actual number was dictated first by participant availability and then by

saturation of the data. It is difficult to know how many research subjects are required for

a study using this type of methodology. The coding procedures and constant comparative

analysis of the data collected dictate the purposive sample size (Strauss & Corbin, 1994;

Streubert & Carpenter, 1995). A roster of Air Force CRNAs, the Air Force CRNA

homepage (http://wpmc1.wpafb.af.mil/pages/anes/drctry.htm), and snowball technique

identified participants for the study. A snowball technique is a kind of 'non-probability or

convenience sampling in which participants suggest other potential participants to the

researcher; the sampling process gains momentum like a snowball rolling downhill'

(Wilson, 1993, p. 178).

Multiple phone calls were made to bases with CRNAs to validate the information

on the roster and identify members who had been deployed. A letter (see Appendix D),

including the researcher's regular and e-mail address and phone number, was mailed to

all identified CRNAs informing them about the purpose of the study. Of those who

responded with interest to participate, a demographic questionnaire (to be returned by

mail), and a guiding list of questions for the interview were mailed out to the individuals

who yielded the widest variety of experiences. They were contacted and interviews were

scheduled at their convenience after they agreed to participate.

A reminder e-mail was sent three weeks later to those participants who had not yet

returned the questionnaire. Confidentiality was maintained throughout the study; names

and identifying information were kept separate from the interviews. Interviews were

scheduled and conducted at the participants' convenience.

Data Collection

As previously noted, prior to the interviews, an explanation of the study was

provided and questions were answered. Participants were notified in advance that the

telephone interview would be audiotaped for verbatim transcription afterwards. The

researcher took notes during the interview, which were coded, compared, and categorized

later; subsequent interviews were influenced by previously collected data. Open-ended

questions were asked with plenty of time for response. Responses were clarified and

validated throughout the interview to ensure understanding. Data was collected by

interview over the phone and demographic information was collected by a mailed

questionnaire. Most of the demographic information on the questionnaire was based on the time of deployment. The following information was collected via the questionnaire and interview:

1. Demographics based on time of deployment-rank, age, sex, marital status, primary duty station or setting of employment (hospital, outpatient surgery center), number of years of nursing, military, and anesthesia experience, specialty within anesthesia field.

2. Open-ended questions regarding issues encountered during deployment, i.e. personnel issues, mission preparation, language barriers, mechanical or biological hazards, infection control or epidemiological issues, roles and responsibilities.

Telephone audiotaping was enhanced with use of a recording control device that attached from the telephone jack directly into the remote jack of the Optimus cassette tape recorder. This method provided the clearest verbal recordings to ensure a more accurate written transcription. Follow up interviews were done to clarify or verify information that was poorly recorded or not understandable by the researcher.

Data Analysis

Interview data were transcribed verbatim from the audiotape and stored on a computer floppy disc (the back up copy) and a password initiating (not a Windows program password) computer hard drive to facilitate and protect data analysis. Transcriptions were completed by a hired secretary (who was informed by the researcher of the need to maintain confidentiality/anonymity of the participants). The researcher maintained the transcribed interviews and disk in a locked cabinet. For the interview

portion of the study, data collection and constant comparative analysis occurred simultaneously.

A three-level coding system using the constant comparative method, theoretical sampling and memoing as described by Hutchison (as cited in Munhal & Oiler, 1986) was utilized. Level I breaks the data into small pieces, level II codes are also called categories, Level III codes are theoretical constructs. Transcripts were analyzed line-by-line and key phrases were coded to reflect their focus. Memoing was used to document the progression of theory development. Data analysis for ten interviews was reviewed by a doctoral-level instructor with experience in grounded theory and qualitative studies and by another thesis committee member.

<div align="center">Trustworthiness and Rigor</div>

Rigor is defined as "striving for excellence in research through the use of discipline, scrupulous adherence to detail, and strict accuracy" (Burns & Grove, 1997, p. 793). Rigor was observed in this study through adherance to the pre-determined parameters for participant involvement. Trustworthiness in qualitative research is demonstrated through application of the four concepts of rigor; credibility, dependability, confirmability, and transferability (Denzin & Lincoln, 1994; Morse & Field, 1995; Wilson, 1993). Denzin and Lincoln (1994) note that in qualitative research, the terms "credibility, dependability, confirmability, and transferability," parallel the criteria of internal and external validity, reliability, and objectivity that is applied in quantitative research (p. 14).

Credibility relates to the trustworthiness of findings in a study; it is confirmed when the participants recognize the findings to be true to their experiences (Streubert &

Carpenter, 1995). Several participants confirmed that their experiences were similar to others I described to them, (when they asked for information). Privacy, of course, was maintained. One threat to credibility is researcher bias, which could influence or distort the findings from the truth (Chenitz & Swanson, 1986). The researcher set aside thoughts that a deployment would be awful in order to remain objective to what was really being said.

Methods such as prolonged engagement, persistent observation, bracketing, and triangulation are used to enhance credibility. Triangulation, according to Wilson (1993) involves obtainment of different perspectives on the same issue or question; looking at different slices of data in the same study to validate findings. Morse and Field (1995) recommend the researcher describe the participants' responses as completely as possible to strengthen credibility. This was accomplished through quoted descriptions in the text.

Dependability in qualitative research is similar to reliability or consistency in quantitative research; there is no validity without reliability, and no dependability without credibility (Streubert & Carpenter, 1995). Consistency reflects the reliability of the *quantitative* research method or tool; if the study were repeated, the results would be similar. While quantitative research looks for consistent results, *qualitative* research recognizes that multiple realities exist and each human situation is unique, therefore variation in results is expected. In this study, there was no prediction of who would deploy again if given the chance. The interviews that suggested a bad experience and against a repeat deployment were frequently the ones who were for another deployment. Chenitz and Swanson (1986) note the true test of reliability in grounded theory is through

the application of the theory developed in similar settings and obtaining a predictable outcome.

Rigor is also achieved through confirmability and neutrality. Confirmability is defined as a neutral criterion for measuring trustworthiness (Wilson, 1993). Confirmability of a study is documented by an audit trail, which is a recording of activities that can be followed by another individual (Steubert & Carpenter, 1995). The researcher maintained records of all conversations on tape as well as written transcriptions. The process is delineated in chapter three. "The objective is to, as clearly as possible, illustrate the evidence and thought processes which led to the conclusions" (Wilson, 1993, p. 26). Morse and Field (1995) recommend the researcher identify his or her own bias both in memos and through other researchers in order to maintain neutrality. Biases were discussed with the thesis chairman.

Transferability is another component of rigor and trustworthiness in qualitative research. Transferability correlates with external validity in quantitative research and refers to how well findings can be applied in other circumstances. Transferability refers to the likelihood that the study findings have meaning for persons in other similar situations (Streubert & Carpenter, 1995; Wilson, 1993). Streubert and Carpenter further note that it is the responsibility of the "potential user of the findings" (p. 26) and not the researcher to determine the degree of transferability. In qualitative research, transferability softly parallels generalizability from quantitative research. The greater internal variety and richness of data, the greater the chance the findings can be transferred to the particular class under study.

Bracketing is a 'methodological device that requires deliberate identification and suspension of all preconceived notions or ideas about the phenomena under study or what one already knows about the subject before and throughout the investigation' (Massey, 1995; Streubert & Carpenter, 1995, p.313). Bracketing helped the researcher maintain neutrality, therefore there are fewer preconceived notions or biases and objectivity can be achieved. As mentioned earlier, the researcher set aside thoughts that a MOOTW would be awful in order to capture the full experience. This concept is supported by Turner (1998) who noted that researchers must acknowledge their preconceived ideas or assumptions and be open to unfolding phenomena. "The purpose of bracketing is to reduce the bias of the researcher during data collection and data analysis" (p. 27).

Human Subjects and Institutional Review Board Approval

All participation in the interview process was strictly voluntary. Participants were assured of anonymity throughout the research process and had the right to withdraw from the study at any time without penalty. No interviews were conducted until IRB approval was obtained, and until the research proposal was successfully defended with the original thesis committee members.

CHAPTER IV: STUDY FINDINGS

Introduction

This chapter will present a description of the sample and analysis of the data. The findings include the results of the demographic questionnaire and interviews. Nine themes were identified from the interviews and will each be described.

Description of the sample

As can be seen in Table 1, there were twenty participants in the study: six women and fourteen men. All participants were CRNAs on active duty in the Air Force at the time of deployment. Five of the participants are now retired or out of the service. Eleven of the twenty had been on more than one MOOTW mission and three of those eleven provided two interviews each.

Nine were deployed as captains (one was promoted to major during the deployment), seven as majors, and five as lieutenant colonels. Most (n=13) served as staff CRNAs at their home base. There were two clinical instructors, two assistant Chiefs and three Chiefs. Areas of stated anesthetic expertise included regional (n=7), generalist (n=5), obstetrics (n=4), pediatrics (n=2), trauma (n=1), administrative or teaching (n=3).

The average age at the time of deployment was 40.3 with a range of 28-50. The average number of years of total nursing experience was 16.4 with a range of 4-26: The majority of the total nursing experience was in the military. The anesthesia portion of those total years averaged 7.4 with a range of 1-18. Nine CRNAs had been deployed once, seven had been twice, three had gone three times and one had been deployed five times; the average was 1.8 deployments.

Table 1.

Data from Demographic Questionnaire

Subject	Age	Rank	Position	Stated Area of Expertise	# Years Nursing	# Years Anesthesia	# Times Deployed	# Years as Military Nurse
1	43	Maj	Staff	Labor epidurals, bedside manner	17	2	2	17
2	49	Cpt	Staff	Regional	12	6	2	12
3	34	Cpt	Staff	Pediatrics	16	7	2	12
4	48	LtC	Chief	None	26	5	1	18
5	46	LtC	Staff	Regional	21	11	2	21
*6	50	Maj	Staff	Teaching	20	8	1	14
*7	30	Cpt	Staff	None	4	3	1	3
8	41	Maj	Asst. chief	General	19	4	1	16
*9	45	Maj	Staff	Spinal block	19	10	1	16
*10	41	Maj	Instructor	Regional	25	10	1	22
11	30	Cpt	Staff	Labor epidurals	10	3	1	4.5
*⊕ 12	36	Cpt/Maj	Staff/Chief	OB	15	7	2	15
12	31	Cpt	Staff	General	10	5.5	2	9
13	48	LtC	Asst. Chief	OB, admin	23	18	5	20
14	48	LtC	Staff	General	19	12	3	18
15	44	Cpt	Instructor	Regional,pediatrics	14	8	1	13
16	28	Cpt	Staff	Trauma	7	1	No response	5
17	34	Cpt	Chief	Regional	18	15	2	14
18	35	Maj	Staff	General	16.5	6	3	16.5
19	40	Cpt	Staff	General, regional	16	7	1	14
20	48	LtC	Chief	Vast Regional, personnel mgmt	20	14	3	20
Average	40.3	Maj	Staff	Regional/epidural	16.4	7.4	1.8	14.0

* Now retired or left the service for civilian life   ⊕ First deployment as Captain

Fewer than half felt that they had deployment specific training before their deployment. The term "training" turned out to be fairly ambiguous and was interpreted differently by most of the participants. "Training" ranged anywhere from reading an anesthesia machine manual to having hands on experience with the machine, annual

CMRT for CRNAs, and briefings targeted to the specific deployment. This topic will be discussed in greater length later in the paper.

<div align="center">MOOTW Characteristics</div>

Sites of deployment included ten countries; Cuba, Honduras, Grand Turk Island, Kuwait, Saudi Arabia, Africa, Ecuador, Croatia, and Haiti, and Panama. The geography ranged from coastal to desert, cold to burning hot, dry to humid. The cultures were overwhelmingly described as poor to "less than third world". "It was common that the Haitians had never seen a doctor in their whole life" stated one CRNA. Many cultures were male dominated and many had inaccurate stereotypes of Americans. Differing standards of care and moral issues were ever present.

> The culture was at first, I thought, nonexistent, but I guess you can find culture in anything. It is the poorest nation in the Western Hemisphere and like the top four in the world, or the bottom four in the world I guess if you put it in that perspective. The average income is like $225-325 a year. Laws are non-existent or law enforcement is non-existent. People there were absolutely emaciated. I saw diseases that I never thought I would see and hope to never see again. At the same time, for all their woes, they were by and large grateful for what we were doing for them. I think that most of them had never seen a health care provider at any time in their life.

> It was predominantly third world country with rugged terrain, however, the cool part was that we were at the major capital city, which had tons of culture and development in terms of eating, resort area, vacation, old churches, a lot of historical stuff. All that was 20 miles from camp and that was very rocky, rugged, not real pleasant or plush. Language was a significant barrier to providing care for them. Of the surgical patients that we cared for, I think there was about 60, but many of them were from Africa or Arabic countries and there was a lot of cultural bias for women taking care of them. And another thing, a lot of the patients were like of a peasant culture and low socioeconomic mentality, because the caste system is so significant in most of the other armies.

> It is unbelievable how poor these people are. I mean the same water they drink in, they bathe in, dead animals in it, nothing but trash. No kind of garbage service there.

I was one of the few females in the environment…and so two things: 1. The Arabic people were very discriminating against me and they didn't want women to touch them or do anything for them. We were supposed to just…like serve them. A couple of times they said 'no' she can't do the anesthesia. The interpreter would say she is doing it or you're not having any. 2. What really freaked me out was that because I was ** years old, the guys were so young, it was emotionally challenging, because they would call me mama or sister, and cry when I took care of them. They didn't do that with the men.

If you find pictures of what the Untied States looked liked back in the 50's, you know the trolley cars, and all that stuff, that is about what this country looked like now. It had been previously under communist control. Then the other thing you discover pretty quickly is that the people from the United States are not well .thought of over there. We learned that very quickly. We went to dinner one time and were talking to the waiter and he was very friendly and chatty with us. After a while he turned and said 'well, you are British, right?' and we said no, we are from the United States. Bam!. It was like a curtain went down. The guy looked at us, his face went blank, and he turned and walked away. So we learned after that, that if we went out to eat and people asked us where we were from, we told them we were Canadian, because they liked Canadians. Se we learned pretty early on, not to admit where we were from. They get a lot of old American TV shows there like "Dallas", and so their conception is everybody who lives in the United States is rich, lives in a mansion and drives a Rolls Royce, and cheats on their wives.

Nothing but poverty, no infrastructure. The United Nations was there, the Argentineans were actually training the police down there because there is so much corruption down there. There are no traffic lights, no gutters, when it rains, there are these big potholes in the streets. Of course, there weren't any funds to fix them. It's like a big obstacle course. It's just mass chaos, it was a little tricky situation because the Haitians wanted to see the dead bodies and there was a bunch of Army and Marine guys there with guns trying to hold them off. It's just chaos and all we really saw was poverty.

One of the other things is that we do 'full corp press' on people because we have rehabilitative and custodial care in the United states, but many of the soldiers didn't want to be saved, they wanted to die because they felt that they could not go back to their country and have a fruitful life. There was a brain-damaged guy that was trach and vent dependent. He could not go back to his country, which was Nepal in Africa, because they have no…they would just kill him.

Language barriers existed at every site and this frequently impacted the informed consent process. One CRNA stated that they gave the interpreter a long list of things to tell the patient about the risks and benefits of anesthesia. The interpreter turned to the

patient and said only a few stern sounding words. "Was this patient really informed" was one CRNA's comment. A child in Honduras received intravenous Tylenol after the interpreter misinterpreted the order. Many times interpreters were busy or unavailable.

> We won't even talk about informed consent (laughing). Half of these guys didn't speak english, and we didn't know their language, you know. Basically the interpreters would come in and you would explain all this stuff for an informed consent, so you would take 3 or 4 minutes explaining all the stuff and they would turn around and say one sentence to this person and they look back to you and say "OK". So, basically, what the interpreter would say is 'these guys are going take to care of you, you shut up and let them do what they want to do'. So you did whatever you decided was best as far as the anesthetic at the time.

> We had translators there but it was kind of tough hunting them down most of the time.

> The thing that strikes me right now is that we didn't consent anybody. I'm not saying that is a bad thing, but probably the thing that impacted my anesthesia most was the inability to communicate with a patient one on one.

> Oh, back to the communication issue. There was this kid who had a doctor order for p.o. Tylenol, the liaison guy would write the orders for post-op care, and one of the kids got the order written and he got I.V. Tylenol.

Eleven of the missions were humanitarian: four were peacekeeping; two were disaster relief for an embassy bombing and a plane crash into a village; and three were for vice-presidential support, new site development, and preparation for a potential conflict.

Length of deployments ranged from 36 hours-179 days and averaged 67.6 days. The peacekeeping missions were notably longer, ranging from 77-179 days while the humanitarian missions were 10-90 days, with the exception of one deployment at 179 days. Two weeks was the median duration for humanitarian deployments.

Many of the humanitarian missions had a specific medical/surgical focus for the deployment. Some missions were designated for plastic surgery repairs, burn management, urology, ophthalmology or otolaryngology. Two CRNAs provided

anesthesia for the police dogs assigned to the troops or United Nations members during

the peacekeeping missions.

> We had two anesthesia machines, one of which I set up in the morgue for K-9
> anesthesia. He (army vet) was my consultant when I was required to give them
> gas. He would dart them with his own combo of meds (not sure what he used).
> When they would begin to stagger, the dog's trainer would pick them up onto the
> table. We would start an I.V., site pre-determined by the vet. I started two of the
> three. He suggeste3d my largest ETT, which was a #9. What about blade size? I
> asked…none needed. Just pull their tongue forward and the cords should come
> into full view. No shit, there they were in full view. Tied the ETT with Kling
> gauze. Administered forane at varying percentages to keep them breathing.
> Turned it off while they were closing. No monitor for these cases. Each jumped
> off the table after extubation. The O.R. nurse joked that my patients at Offutt
> didn't wake up that fast.

Refugee support and humanitarian missions appeared to be the most taxing; the

CRNAs provided support to approximately 32,000 migrants in two cases. Peacekeeping

missions were the least taxing from an anesthesia perspective, but there were many other

tasks performed such as surveys, immunizations, assessments, sandbagging, inventory,

and water detail in the anesthesia down time.

> We were coming in at six in the morning, rounding on the patients, figuring out
> what we were going to do for the day, setting up our schedules, taking care of the
> patients and then we would go grab lunch. Then we would come back and do
> afternoon rounds, and do a lot of teaching, and then in the evening, we would go
> back and catch a nap for a while. Then the governor constantly wanted to be
> having us out for supper, which meant their idea of supper ends at about 11:00 p.m.
> and then we would have to be back at 5-6 in the morning. It was just killing us.

> We were working somewhere in the vicinity of 18 hours a day, for two weeks with
> no days off. That was just what was necessary. We walked into a country that was
> in the middle of a disaster. The entire health system was overwhelmed. Pretty
> much slept for a week when I got home.

> So any job that needed to be done…anybody that was not involved in doing
> something else…you did those jobs. Like at one point, we spent days taking down
> sand bags, refilling sandbags, and putting them back up.

> Oh God yeah, we sandbagged. I hung out with the logistics officers and sometimes
> helped them with inventory. When we did the tear down, we took the ATH down

and so we had to do inventory and return the equipment, packaging it all up, that kind of thing. Not only did we do the O.R. equipment, which was a kind of farce, because we packed up those field machines…Ohmeda 800, whatever they were and I didn't even know what parts were supposed to go where. We just threw stuff in boxes.

Fine sand particles could get through the filters and cover everything within the O.R. sterility of equipment was a definite concern. During my deployment, three patients required surgical intervention. Unfortunately, the surgical facility was not adequate in the Saudi Arabian desert. As a result, only one surgical case was completed. The filtration problem prevented a couple of appendectomy cases that could have been done. Most of my time was related to duties outside the anesthesia arena. These included a 'medical rapid response force' which is an emergency contingency team. I was also a member of the 'medical facility utilization' and headed the allergy and immunization clinic. The most time-consuming function was as safety officer. I was also part of the 'critical incident stress team' and was a water procurement officer and bus driver

Field Anesthesia Environment and Administration

Field Machine

Virtually all (except two) of the missions used the 885A field anesthesia machine for the administration of a general anesthetic. This machine is not equipped with all the 'bells and whistles' that modern anesthesia machines have. Accurate delivery of anesthetic gases on the field machine encouraged the inexperienced user to dial several factors into a 'whizwheel' to determine what concentration of gases will be delivered to the patient. Several participants stated that they could have easily overdosed the patients with the field machine if they had not known how to use the whizwheel. The whiz wheel is taught at many anesthesia schools but is not used in everyday practice. Many CRNAs had to review how to use it during their deployment.

The 885 is different in that, of course, you have to figure things out a bit. It is really not that bad, but if you got careless and didn't know what you were doing, probably you would overdose somebody and not realize it. So if you had an end-tidal gas analyzer with you, then that gave you a big margin telling you what you were delivering and if you don't have that, you just hope that you are spinning the wheel properly.

> I would definitely make sure that everybody that gives anesthesia knows how to use a field anesthesia machine. It is actually a very dangerous machine if you don't know what you're doing properly. You could pretty much give your patient a lethal dose if you don't turn the gases on in the proper order or turn them off in the proper order. And I don't think that a lot of people know that.
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> I tried to do regional as much as possible down there because I had a field anesthesia machine, the old Ohmeda 885A, the same one they used in the Korean Was I guess. I mean it worked OK, actually it was very accurate according to my little wheel that I did. But when I was in school and I memorized that little formula thing and never thought I would use it again. Go figure, I did use it this time. You could sit there and look at these monitors and not change any of the setting on your anesthesia machine. You could sit there and look at the monitor one second and you are giving 1.5% forane. The next minute it has gotten warmer in there because the blower is right behind the anesthesia machine and now it says you are giving 3.5% forane and then all of the sudden, the heater kicks off and a half minute later it says you are delivering 0.5%. You haven't made one adjustment on the machine at all. But the temperature in the room can make that big of a difference. And the thing was, you could see it in the patients vitals. So I thought that (having the gas analyzer) was the best thing since sliced cheese, because otherwise you'd be making minute by minute adjustments unless you were in an environment that you could control the temperature.

Lack of Confidence in Equipment

In addition to the lack of a gas analyzer, anesthesia machines, ventilators, and monitors routinely were either broken, duct taped, damaged by flooding, or outright missing. Due to those problems, many CRNAs did not trust their anesthesia machines and opted for anesthetic techniques that minimized the need for mechanical ventilation and general anesthesia. The CRNAs heavily relied on assessment skills and knowledge of the stages of anesthesia to determine the depth of their general anesthetics. "Hypervigilance" was observed when using machines lacking safety devices or when the CRNA was uncomfortable and not confident with the accuracy of the field machine.

> Oh my God, that stinking field machine. Half the time I didn't know what I was doing. The good thing was that they were young and healthy, but the field machine had very few of the current safety devices. It was hypervigilance, kind of scary.

I think it was some kind of old Ohmeda. We tried to use the ventilator on the first two cases and figured that it wasn't worth the effort, so we abandoned that and as I said we tried to do a few cases of TIVA, but predominantly inhalation and spontaneous ventilation when possible. It was probably a 1960 type vintage ventilator and you could not reliably set any particular tidal volume. We decided it would probably be safer to not paralyze (after initial intubating dose). We just bagged them the whole time until they came back.

One of the things you have to realize is that in third world nations, quality control and preventive maintenance do not exist. So, they buy all this equipment and can't maintain it. The stuff I found the most reliable was the old timey stuff. A couple of the younger guys also had more problems because I trained back before I had pulse-ox and end-tidal capabilities. We didn't have any of that stuff when I trained and I think that I was actually more comfortable in the monitoring without all the invasive monitors. If I have a criticism at this time it is that the students spend too much time anesthetizing the monitors and not enough time anesthetizing the patient.

To graduate from anesthesia school, we had to do 20 cases on that thing (field anesthesia machine). I have done carotids with that thing. It is a great machine. The only problem with it is that it will allow you to be stupid if you don't pay attention. I trained with side arm vernitrols, so the concept of using the whizwheel was not foreign to me, just part of my basic training.

One of the main stressors for me was not knowing what the heck I was getting into and #2 was that machine. I had no idea how to use it and pretty much figured that after I got there, read the manual, which really didn't help, it was 300 pages long and told how to clean it, and take it apart, but not really how to use it. But he showed me and I kind of had an idea.

The anesthesia machine there, I would never use it because it really never passed any of my tests. I mean the bag, it was taped with duct tape. They used one bag, the same anesthesia circuit, probably for years. It was a disposable circuit and it was probably from the last group that came through.

Avoidance of Paralysis

Some reported regional anesthesia was especially popular in Haiti where

communicable diseases such as tuberculosis and HIV were common. Chemical paralysis

was avoided in Croatia due to the need to move at a moment's notice if a bombing was

threatened or occurred.

I would have the translators tell them if they moved one more time, they were cancelled. I mean, you didn't want to get stuck with a needle, and I cancelled cases where they moved if I was starting an I.V. There was only so many pair of gloves that I could wear and I'm not coming home with it (HIV). There are enough people here that want surgery and I don't have the time for this and I'm not setting myself up for the risk. We did a lot of local infiltration things to limit the number of needles. We did a lot of regional, but no monitors, and sometimes without sedation- they felt it for the most part.

Our goal was to not use paralysis when we could. Thank goodness it was very rare that we had a belly case because we still had the potential to be bombed. We had to keep people spontaneously breathing, lest we be bombed. We were able to transport them breathing or we would leave them with a nitrous flow and leave them spontaneously breathing.

Volatile Gases, Scavenging Systems

Because that was all that was available, it was routine for a volatile anesthetic to be

put into the wrong vaporizer (e.g. halothane into an isoflurane vaporizer). Anesthetic

gases would contaminate the operating room air when the gas scavenger was missing or

inoperable. Lieutenant Don Stafford, CRNA, of the Naval Reserves, recently noted that

while on a two-week deployment on a ship, the scavenger hose was directed to the corner

of the operating room. There was no way to vent the waste gases to the outside air.

Chronic breathing of anesthetic gases has been linked to anemia, neurologic changes and

birth defects (Barash, Cullen, & Stoelting, 1997, p. 473, 1086).

The field anesthesia machine had a forane vaporizer on it. The anesthesiologist that I handed the list to said you know, go get these things from the anesthesia work room while I finishing packing out the rest of this, came back, said he had it, he didn't, there was no forane in our bag when we got down there. So we had plenty of sevoforane, we had halothane, and we had a forane vaporizer. The physician refused to put halothane into a forane vaporizer, so that left us using sevoforane and luckily the hospital down there happened to have a brand new Narcomed anesthesia machine sitting there. We lucked out in that regard.

No scavenge system. You could…what we had was halothane, end of discussion. We had a choice between running the dermatome or the air conditioning and there was no scavenge system. We would run the dermatome until I said Jesus guys, I'm

getting a headache. Turn on the air conditioner for a few minutes. That would get some of the fumes out of the O.R., and go back to the dermatome again.

Inadequate, Broken, Damages Supplies

Millions of dollars in supplies and equipment were lost due to heat (medicines lost potency), the flooding from the hurricanes, or damage from rioting, or theft. This required the CRNA to be creative with what they had on hand or to scramble an order for more supplies. Frequently the supplies either ran out too quickly or needed supplies did not arrive when the team did, and sometimes not at all. Oxygen tanks had to be chained down and vaporizers drained daily due to theft problems in some locations. At many sites, all disposable supplies would be resterilized and used again; including endotracheal tubes, masks, gloves, gowns, oral airways. If the CRNA threw anything away, the local hospital personnel would pull it out of the trash and recycle it. Drugs were never wasted at some sites, even though waste documentation of controlled substances would suggest so. Narcotics and induction agents were used so efficiently that there were no leftovers or wastage.

> Choosing to open one amp of propofol per day for three or four cases and using the whole amp to save money. Choosing to open a five c.c. amp of fentanyl and using it for two to three cases a day, saving the rest for the three to four cases tomorrow. We did account for what we used and we did witness waste, but J. and I decided that it was important enough to save money, because we weren't sure if we had to stay longer.

> We had a hurricane before I got there, so we spent part of our time digging out of the warehouses where this stuff was buried in mud. The ATH where I was, was at a low point, right on the ocean. I don't know why they put it there. Part of it actually got swept into the ocean with the flood. So when they relocated up to where I went, we had a lot of problems with logistics, a lot of supplies never made it, they were buried. We had to go through literally millions of dollars worth of stuff and throw it out because it was wet and got contaminated.

> The ECU, which is the environmental control unit, went out, so the heat went up to like 107 degrees in the isoshelter and destroyed some of the medications. Potency,

I didn't realize until I did a spinal that some of the drugs in the isoshelter, it's potency got damaged by heat. Stuff like that, that is what we had to deal with during power outages.

Well, the Haitians were rioting or something. We couldn't get our shipment in and then we were eating cheese sandwiches and powered milk. If they would run out of spaghetti sauce, they would just use barbecue sauce because it kind of looks the same. Which is fine when you bite into it, expecting spaghetti and meatballs with 'spaghetti' barbecue sauce.

Yes, supply problems…what we told them we needed drug-wise, they did not ship. We did not have forane because they thought it was explosive and they didn't send it down on a plane and they didn't have Versed for us. In the 885A we put halothane into a forane vaporizer.

We had a little bit of theft issues. When we would leave for the day we would have to secure a lot of things. For example, if you left isoflurane in your vaporizers, it would probably be gone the next day. We reused circuits and masks, we wouldn't throw them away after the case. Anything that we did throw away, they scarfed up. They would get gloves that were used. They would get gowns that were used. You wouldn't believe, but anything that was thrown away, they would reprocess it and stuff. We found ourselves washing endotracheal tubes if it was a select size and you are sort of running out. The other thing we had to deal with was oxygen supply. The O.R. was supplied with one of the large H cylinders- chained to a wall. Again, that would frequently turn up empty or low, you know when you'd turn it down or we turned it off when we left. So, I think they were stealing the oxygen. I think they would swap the tanks or something, because their tanks were a little lower. They would take our tanks and switch over.

We had armed guards on the equipment all the time since the stuff we had in the back end of the pick up truck was a life time of works value for most of the people there.

They did an excellent job on infection control and re-sterilization there. But, we are in this throwaway economy here and we forget that the rest of the world doesn't do that. Anything we brought, they would recycle…ALL the equipment was reusable.

What we had left we…I mean you had to change your whole philosophy. Here, what's left in the syringe, you find somebody to waste with you and document it. Then you saved it for the next patient. When we got done, what we did was tell the nuns at the little place that we were at and said, 'geez, you know, we consider this to be contaminated in the field and can't take it back, would you mind taking it off our hands'. They were amazed that we would do that for them.

Power Failures, Austere Utilities

Power failures or light outages occasionally occurred during surgery, requiring the CRNA to manually monitor and ventilate the patient, sometimes in darkness. To compound this problem, the air conditioning would go out and the operating room air would become stagnant and so hot that their garments would become drenched in sweat. Utilities were austere and ranged from no water or electricity at times to poor overall sanitation. In one location, some people from the community would launder the CRNAs' clothing. The CRNA stated that the clothes would come back "smelling worse than their dirty, sweaty clothes were before laundering". Another CRNA noted that toilets could not be flushed after a certain hour because the water would be turned off. One participant received electric shocks from the water as a result of a broken heating element.

> We had electricity all over the base down all the time because we were on generators and I guess they take the backup generators, but ours wasn't working in the O.R. And the power went out when we were doing a case. I yelled to get the backup generator working and the backup generator failed also, so we had to call CE emergently to get it to come back on. That was the first time that the power went out during a case. I had it go out twice during a case. The second time we were well prepared.

> We stayed in the nicest hotel…I have never been in such a dump in my entire life. In order to flush the toilet you had to…because they turned the water off you couldn't flush the toilet. You had to have a five gallon bucket next to you, so if you needed to flush, you would get some more water- you would pour it into the back to flush it. They only turned the water on twice a day. Then the water…there was this heating element thing to heat the water as it comes out, but I would keep getting shocks from it. And so, the people would turn their laundry in to get done because it was really cheap, like 20 cents to do two loads. But it came back smelling worse that what it was when it went in, so I wore the same thing for two weeks- everyone stunk anyway, so it didn't matter. All I did was sweat there because it was really hot.

Contamination, Pestilence

Sand and dust on the anesthesia and operating room equipment were problematic in desert regions; supplies were sometimes contaminated and wounds were at risk of infection. Instrument sterilizers broke often. Insects and other creatures were an every day occurrence at the majority of sites. There were mosquitoes, banana rats, iguanas, and sand crabs in Cuba; camel spiders, mice, scorpions, snakes, and "attack" flies in Saudi Arabia; and geckos and roaches in Honduras.

> We had el grande la cucarachas. Huge cockroaches and geckos.

> It was a tent that you did nursing. The ability to maintain sterility was questionable. There was so much dirt and dust flying around in the tent. The animals they had over there…I mean there were always mice in there. There were wild cats, wherever they came from I have no idea. They got in the tents, sure they did, not in the O.R. per se. But they could have gotten in there because there was nothing in the doorway to block it off or whatever. There were snakes and scorpions. There was an extreme amount of flies over there. The flies are different than any you have seen anywhere. They come at you and just dive into your food. So flies were always a problem.

> Camel spiders. They were…every once in a while, you would find one in the ATH. They were all over the place and mice were a big problem.

> Yeah, humid, muggy, mosquitos. We had to have malaria prophylaxis. It was a tropical country, but no vacation for sure.

Accommodations

Accommodations while on the deployment were varied, but were generally nicer for those on humanitarian missions. Some stayed in "four star hotels" while others stayed in connex boxes (shipping crates), expandos, tents or hooches (plywood walls with netting on the top). Sometimes, air conditioning was not available. Privacy or personal space was minimal at the sites with tent living.

> Saudi was an American base within a Saudi base. We were not allowed to go out; on 'locked out', so basically desert, tent city living.

The base at Prince Sultan Air Base is quite isolated and prison-like.

We were in a warehouse that had hooches built into it. The first week there, there were two of us in a hooch that was 12 by 8 feet. They were made from 2 by 4 plywood. The walls were eight feet and there were no ceilings, except that mosquito netting was placed over the top. The lst 11 weeks, my hooch was 10 by 14 feet. It was noisy and dusty. It was cool most of the time and we had air conditioning.

We had what were called connex boxes…basically they are shipping containers that are designed that when they get to their destination point they empty out what is in them and they can be set up and stacked on top of each other and in rows. They have a door and a couple of windows in them. We were kind of…Ok, better than a tent, because it was wintertime when we were there. Not extremely roomy.

My big beef with that deployment was there were officer men in one area, enlisted men in another area, and then all the girls in another area. And that was a little aggravating. An ** year old next to two 18 year olds. I just felt a need for privacy and social, cultural things were quite different when you are a generation apart and half or twice a person's age. It was quite disruptive. I felt that our rank as females was being minimized, versus the men who were segregated, as the officer and enlisted men.

Personal Stressors

Several participants noted a steep learning curve while adjusting to the enormous number of changes in the new environments. Fatigue and stress were particularly common at the humanitarian sites. Restroom breaks did not occur some days while on duty. Boredom and feelings of isolation were common at peacekeeping sites. Saudi Arabia was described as "prison-like" since they were not allowed to leave the base perimeter. Perceived inexperience of senior leadership, lack of personal time and space, and "people getting on your nerves" led to a great deal of frustration for some. Alcohol abuse was not uncommon.

I think that you have to anticipate the challenges of lonesomeness and in that case, the challenges of alcohol. I drank a tremendous amount relative to what I would normally drink on the times that I was off. Alcohol was a tremendous problem. And when the mission changed, it became a dry operation. Some of the stuff we

took care of, it was primarily land mines, then some of it was motor vehicle accidents related to alcohol.

The vaporizer was...it was a copper kettle and so we had two agents, halothane and forane. We didn't use halothane whatsoever because the manual on the vaporizer said if you want to change agents, you need to completely drain, let it air dry for 30 minutes and then refill. We didn't have that luxury, so what we did was, if we needed to do a kid, we would give him ketamine, versed and atropine, start their I.V., and give them a little propofol and then put the mask on. The learning curve was a little steep there, but that is was we did.

Another problem was after you have been with people for a while, they really start getting on your nerves. That was the big thing, having to deal with multiple personalities. You really find out what a person is like when you have to deploy with them. You are eating, showering, you are with them 24 hours a day- no respite!

My biggest thing was, I was totally frustrated with senior leadership. How ill-prepared and unknowing they were. Primarily volunteered and they were so uninformed and so unaware of what was going on. They just didn't have a clue. I felt like we were laughing stocks as medics in a joint operation. One of the biggest things that I would do, while I appreciate the volunteers, I think that we have to be skilled-specific on who we take.

Four and a half months is a long time when you have small children, and being on an isolated air base in the middle of a very hot Saudi Arabian desert does not help the quick passage of time. Consequently, in the ensuing months from my deployment, I don't feel badly about taking time off from work if I'm not really needed. I can't put my finger on it, but I do have a change in attitude.

Communication

Not everything on the deployment was negative. Ease of communication was identified as being a life-saver for most persons, either via unlimited access to telephone calls to home, e-mail capability, or contact with a predecessor from their type of MOOTW. Even Admiral Jay Johnson, the Unites States Chief of Naval Operations noted that "thanks to e-mail, dads can now keep in touch with family from anywhere-on sea or land" (Ciabattari, 2000, p 12).

I would not keep them longer than three months and I would have a better way of communication with friends and family, be it by computer, internet, which they did

but was not always up over there, and by telephones…not having any calls that were regulated or whatever. You know they say, hey, you are deployed and stuff like that and the calls you could make back to the states would be unlimited.

I sent and received 12-15 e-mails a day. I didn't have that during Desert Storm and I don't think that most of my colleagues have had that in other places. I think the next time I deploy and if I don't have that, I will be hurting.

One thing that I would add is that if you are someone who has been dinosauring it, and haven't gotten around to having e-mail at home, get it. Because it seems to me that most deployment situations now have some amount of capability of doing e-mail, and I think that did a tremendous amount of helping people get through the deployment. Most of the time that you are deployed, using the phones is so damn difficult. If for no other reason than the time zone difference. E-mail allows you to communicate back and forth. You know, at times when it is convenient for both parties. If we had not had e-mail capability, it would have really sucked.

And then the communication was probably the biggest deal. At first we had 20 lines. I don't know what the number was, but the whole base could use, outgoing, more than 20 by far, and then at the end they switched us from AT&T to MCI and they knocked us down to less that a half dozen, and so it was really tough to get through. We got a free 15-minute phone call everyday, which was nice. We then had the internet. We did e-mail which actually helped, but there were only so many computers, and so the main thing was communication. Sometimes I couldn't get out for a couple of days. I mean you would sit there and try for 30 minutes to get a line out, then after 20 minutes you are so mad you kind of hope that you don't get through. My wife would wring my neck 'cause I'd be so angry.

Flexibility

CRNAs became more flexible and creative with their anesthetic techniques in an attempt to make do with what they had. For many, this built confidence and taught them how to be more flexible and to cope better with the limitations they had. This broadened their perspective and led to a greater appreciation of the United States.

One piece of advice is to be flexible. Some of the experiences are unique and a one time chance to do something different.

Broadens your perspective, no doubt. And that has been the case even in subsequent deployments. Gives you a good appreciation for the fact that you do need to have the capability to pick up and go.

I think I learned a little bit more about myself...that I was more confident in myself, that I could handle different situations be it that it came up in civilian life of military life. I was just better able to cope with situations.

I think that prior to departure and being at the medical center, I was very unaccommodating and a little bit persnickety...I felt that only one way was the right way and now there are many ways to skin a cat. I felt that I was much more dynamic and accommodating and flexible. I felt that I was still always safe and cautious, but I was less rigid. I think that anesthesia providers are very talented at accommodating; changing machines, changing environment, they just manage.

I think it made me more acutely aware of how good the worst of us have it here in the United States. I guess that it altered me professionally in the fact that I needed to speak up a little bit more on working with students and such in the military on what you needed to do to be able to do things out in the field. The thrust of it was; have you ever sat down and looked at the equipment you got, and the skills you have. What could I do if there was a disaster in my hometown and I needed to get out of the O.R. to take care of people- could I do it? What capabilities do I have? A lot of us forget that we can do anesthesia with a couple of syringes and an endotracheal tube. Not pretty, but it could be done.

It definitely taught me different ways to do anesthesia. I had never done it that way before in a real world setting with spontaneously breathing patients. So you kind of have to change your way of doing things there; hydrate instead of giving a bunch of stuff, because you have to keep them breathing, otherwise you are stuck bagging them the whole time.

Yeah, I would say my personal life was influenced because I realize how fortunate we have it in the United States. Makes you appreciate things more, that we have running water and refrigeration...and professionally-it added to my flexibility and my creativity in giving anesthesia.

You learn to become very adaptable and work as a group. I was more confident and adaptable.

I think it helped me to appreciate what I have and what's available to me and I know for damn sure it helped me appreciate living in a republic and a democratic form of government. I would say yes that it influenced my personal life. It's kind of hard to put a finger on it...and the same thing happened to me after Desert Storm. Coming back and reaping the benefits of being a United States citizen. That is the easiest way to put it.

I think in a sense it did affect my professional life. I think I was developing a sense of flexibility before I got there, but certainly once I finished that deployment, I realized that you can do anesthesia just about anywhere if you have certain things. Doesn't have to be exactly what you're accustomed to, doesn't have to be exactly

what you think you need…you have to modify and be flexible. You can deliver safe anesthesia without all the bells and whistles. I did without it OK.

I think it helped me appreciate the flexibility of my fellow service members. The stuff we did down there with the equipment we had and in the conditions in which we worked were just phenomenal. It helped me become a more well-rounded anesthesia provider and probably a more rounded Air Force officer. That may be something that I see benefit down the road.

Training

Training was the most ambiguous category, which made a decision on whether someone had been trained or not very difficult. Some people considered themselves trained if they solely read a manual on the field machine, others said they didn't feel adequately trained unless they received hands-on practice using the machine with real people as well as deployment specific briefings and anesthesia specific readiness training. Some interpreted the Combat Casualty Care Course (C4) or Red Flag to represent field training.

The vast majority of participants noted the need to have some kind of training with the field machine prior to deployment. Many of them did not have hands-on training with the field machine; some only read manuals before arriving at the deployment location.

The training I had…it was kind of shoddy, except I went through all the manuals and just started using it. I would definitely have more of a training program to use the field equipment. I think that is still lacking a lot in the Air Force. Training in a more realistic setting. Do all the field training you can. Just take the initiative I guess and learn as much about the field equipment, the ATH, and all that kind of stuff.

When I was there, they had a field anesthesia machine and it was to prepare me to go over there. So we kind of hooked it up to one of our major machines back in the O.R. and used that. So I did have some type of training, but it was very rudimentary you know. You had to go through a big thing of getting the patients to consent to having a field anesthesia machine used on them. That wasn't easy and

so a lot of people declined to have that done. Why would you want a field anesthesia machine used on you when you could have the real one you know.

If you are going to be faced with using an older machine or using the 885A, I think you need to see its heart. I would say you need to anesthetize someone at least once with it but now they are saying we can't. You can't legally do it here in the United States because the Surgeon General said it is not safe, so I think you are in a "Catch-22". If it could be worked out, I think that you need to practice with the 885.

I would definitely make sure that everyone knows how to use a field anesthesia machine, because it is actually a very dangerous machine to use if you don't know what you're doing properly.

Part of their COT or MIMSO or whatever you want to call it; when you get to you gaining facility, should be to force you to take apart and put together that field anesthesia machine. Just since we are suppose to be this air expeditionary force ready to go at a moments notice.

I got to see the machine, but I didn't get to use it. I had C4 training in 1989 and nothing after that.

I actually got better field training after the deployment. I mean I have been exposed to the 885 but I never had any hands-on a patient or pig or anything like that. That probably came about a year and a half later after the deployment.

My biggie would be to require everybody in the anesthesia department to do 'x' number of cases with the field anesthesia equipment every year and that it be a mandated part of the curriculum for students. We are gearing towards practice in the civilian world model, and that certainly is where most of us are going to practice most of the time, but there is not one of us wearing the uniform that isn't capable of being in a totally different location on very short notice.

(regarding the 885…) Yes. I had seen one before, same model that we had down there and someone said, well this is your machine and I had seen it for like maybe five minutes. They said it's real easy, it's intuitive, you will know how to put it together and take it apart kind of thing and it works just like any other machine. We didn't use it.

Just work with the field anesthesia machine for a period of time before going over. Do nothing but cases with the field anesthesia machine.

Participant Recommendations

Two recommendations (in addition to training on the field anesthesia machine) were made by the majority of the participants for future deployees: a. Contact a predecessor from a previous deployment, and/or b. Be good at regional anesthesia.

> Talk to other people who have been deployed. I know that since I have deployed, a lot of people in my squadron have asked me "Ok, what do I need to bring?" So what I did was made a list and put it on the computer, and every time someone asked me, I would print it out for them. I feel that it is important, so pick someone's brain.

> Get in contact with whoever you are going with and find out actually what is your mission. Is it just to treat who you are with or is it to treat the local population or is it a mix, and what is the translator system. What kind of BX underground do you have, as far as getting personal stuff? Find out what your living conditions if at all possible. Just how primitive are your conditions going to be?

> A major drawback in the military is the frequent turnover and loss of corporate knowledge that is gained from these missions. The experience should be brought back home and shared. The field anesthesia machine should routinely be used on ASA one and two patients, and the drawover machine should be practiced with in the pig lab.

> There should be some interaction with someone who has already been on one. Giving them an idea of what to take and to bring and what it means. Every situation is different, but there are certainly areas that you could cover, as far as clothing, what you can expect to be there and not be there things like that. Whether that be web-based or something of that effect. You need to have an understanding of what you're getting yourself into.

> I mean I would have people trained better that were going, and that the people would have a chance to know each other before they went.

> One thing I would have liked to have had was communication with someone that had been to the site that I was going to. Take a look at communications with other people who had been to other places.

> The other thing that I think is going on now is that they are trying to keep teams, so you should know who you are going to deploy with.

> Professionally, I believe I was ready. Even before I arrived to Prince Sultan Air Base, I was contacted by my counterpart and briefed on what to expect. Consequently, I'm not sure that further changes would have helped.

We did CMRT the week before we left, as a group, which I thought was good, because it allowed us to get to know people that we were going with.

I mean I did a lot of regional, which I am not a big fan of regionals anyway, now that I'm a civilian, which is perfectly fine with me. But I guess I can say I did a lot of blocks.

Be as proficient as you can with your skills…like regional skills.

Be familiar with regional techniques.

Much of the medical problems are orthopedic and general anesthesia may not be an option. Consequently, learning or having regional skills can be a real benefit.

Well, we did ankle, axillary, bier, digital, field blocks, and some brutane, and mask and endotracheal generals. I did lots of local, ilioinguinal blocks and mandibular blocks that were not part of my responsibility but I learned how to do it from a dentist and I got to pull some teeth just to see if the blocks worked. I did spinals, all of them xylocaine, a sciatic, femoral, and lateral femoral cutaneous block. I did a number of wrist blocks.

Themes Identified From The Data

Nine themes emerged from the data: Communication, flexibility, environment, equipment, personal issues, cultural issues, non-anesthesia roles, training, and recommendations. See Table 2 on next page.

Table 2.

Themes from Data

Themes	Characteristics
Communication	Language barriers, correspondence with a predecessor, e-mail capability, unlimited access to telephone calls home, poor or lacking deployment briefings
Flexibility	Adaptability, broadened perspective/anesthetic creativity, learned to cope better with limitations and be less rigid with techniques, greater confidence- learned more about self
Environment	Sand/dust in the O.R., bugs/flies/geckos/scorpions/mosquitoes, hurricanes, extreme heat, poor sanitation, no water/electricity, austere living conditions
Equipment	Lack of monitors, scavengers, and analyzers, stolen/broken/bandaged equipment, damaged supplies from heat or flooding, unreliable gas output, tidal volumes, power outages
Personal issues	Steep learning curve, fatigue with few restroom breaks, feeling isolated/imprisoned, boredom, stress, alcohol abuse, frustration with senior leadership, greater appreciation of United States, greater confidence in self and anesthesia skills
Cultural issues	Different attitudes, behaviors and ethics, language barriers, stereotype of Americans, consent problems, riots/theft/lack of law enforcement, extreme poverty
Non-anesthesia roles	Sandbagging, surveys, assessments, immunizations, water detail, room inspections, consultants for ICU and post-operative care unit, inventory, order supplies, dig ditches, bus driving
Training	Be physically fit, use field machine if at all possible, be as good at anesthesia as possible-practice regional techniques
Recommendations	Use the field machine on real people, limit tours to <90 days, know your team, contact a predecessor, be ready to go on moments notice, have e-mail capability set up at home, pack light/wash often, practice the whiz wheel, bring something to combat boredom/stress, be flexible, bring a gas analyzer

When asked if they would deploy again if given a choice, thirteen said "yes" and four said "no". Four people had been deployed on both long and short missions- of those, two said they would deploy again on a short mission, but three said never again for a long one. This willingness to deploy surprised the researcher in light of the plethora of

negative issues identified. It should be noted that the majority of participants said they developed a much greater appreciation of the United States and all those things we take for granted such as indoor toilets, running water, electricity, and the freedom to live our lives our way. During their deployment, perspectives were broadened, and confidence in self-ability and anesthesia skills blossomed tremendously for many.

CHAPTER V: SUMMARY, IMPLICATIONS, RECOMMENDATIONS, AND

THEORY

<u>Summary</u>

There were 20 participants in the study, which resulted in 23 interviews (three

CRNAs gave two interviews each). Demographic data were obtained through a mailed

questionnaire and narrative data through a telephone interview. Three persons chose to

mail in their interviews. Nine themes emerged from the data: communication, flexibility,

environment, equipment, cultural and personal issues, non-anesthesia roles, training, and

recommendations for future deployments. Four of those: communication, flexibility,

good regional experience, and hands-on experience with the field anesthesia machine,

were essential features and the keys to success and psychological survival in a MOOTW

environment.

<u>Implications</u>

Identification of work-related issues while deployed on a MOOTW is the first step

towards improvement for these types of missions. Implementation of the findings of the

study into annual combined medical readiness training or deployment training programs

could lead to a smoother, less frustrating, more satisfying experience for the person

deployed- especially for the person who has never been deployed and therefore has no

frame of reference to draw from. CRNAs will probably have the opportunity of being

deployed sometime during their career. It is in the best interest of the CRNA to review

the 'lessons learned', so that they may enjoy a successful deployment.

Researcher Recommendation for the Air Force Nurse Corp

A majority of the participants noted the benefit of contact with someone who had either been deployed or who was a predecessor on the same type of deployment. It is the recommendation of this researcher that a database be developed, linked, and passworded to the anesthesia home page for the Air Force on the internet. This database would include places, dates, and types of deployment, as well as points of contact and important comments for deployees to access.

Access to further education and performance with a variety of regional anesthesia techniques by CRNAs should be encouraged by commanders and facilitated by the physicians when appropriate. This component of anesthesia administration was noted by many to be exceptionally useful and sometimes necessary in a MOOTW environment.

Further Study Recommendations

Further study describing the "training" issue should be clearly defined. CRNA participation in peacekeeping and humanitarian missions should be assessed separately as these were noted to be unique from each other, although they are both classified as a MOOTW. Replication of the study with other services such as the Army or Navy is a possibility. According to many of the interviewees, the Army is very aggressive with MOOTW deployments and could prove to be a fertile ground for participants.

Theory

Three theories emerged from this study: (a) Psychological well-being in a MOOTW environment is greatly facilitated by communications access (via extensive e-mail capability, telephone calls to family, and contacts with MOOTW predecessors); (b) Training on the field anesthesia machine and experience in regional anesthesia pre-

deployment are important for a successful deployment; and (c) Flexibility is essential

with anesthesia administration in a humanitarian MOOTW environment.

REFERENCES

Army. (1998). Untitled. Retrieved December 8, 1998 from the World Wide Web: www.almc.army.mil/ORGNZATN/ALOG/marapr/ms879.html

Barash, P.G., Cullen, B.F., & Stoelting, R.K. (Eds).(1997). Clinical Anesthesia. (3rd ed.). Philadelphia: Lippincott-Raven.

Barton, C.R., & Beeson, M. (1997). Anesthesia for trauma during wartime. CRNA: The Clinical Forum for Nurse Anesthetist, 8 (1), 2-12.

Bartone, P.T., Adler, A.B., & Vaitkus, M.A. (1998). Dimensions of psychological stress in peacekeeping operations. Military Medicine, 163, 587-591.

Bell, E.A., Roth, M., Weed, G. (1998). Wartime stressors and health outcomes: Women in the Persian Gulf War. Journal of Psychological Nursing, 36 (8), 19-25.

Burns, N., & Grove, S. (1997). The practice of nursing research: Conduct, critique, and utilization. (3rd ed). Philadelphia: W.B. Saunders.

Chenitz, W.C., & Swanson, J.M. (1986). From practice to grounded theory: Qualitative research in nursing. Reading, MA: Addison-Wesley.

Ciabattari, J. (2000, June 18). This seaman is a family man: He's the father of the year. Parade: The Sunday Newspaper Magazine, p. 12.

Dees, J., & Garcia, M. (1995). Program planning: A total quality approach...based on the plan, do check, act (PDCA) cycle developed by Deming. American Association of Occupational Health Nurses, 43 (95), 239-44.

Deming, W.E. (1986). Out of the crisis. Cambridge, MA: Massachusetts Institute of Technology Center for Advanced Engineering Study.

Denzin, N.K., & Lincoln,Y.S. (Eds.)(1994). Handbook of qualitative research. (pp. 1-17). Thousand Oaks, CA: Sage.

Department of the Air Force. (1996). Military operations other than war. Air Force Doctrine Document 2-3. Washington DC: Author.

Elbing, L. (March 1997). The DOD humanitarian and civic assistance program concepts, trends, medical challenges. (AU/ASCS/0377A/97-03). Air Command and Staff College. Maxwell Air Force Base, AL: United States Air Force.

Hutchison, S. (1986). Grounded theory: The method. In P.L. Munhall & C.J. Oiler (Eds.) Nursing research: A qualitative perspective (pp. 111-130). Norwalk, CT: Appleton-Century Crofts.

Joint Chiefs of Staff. (April 1995). Joint Pub 4-02: Doctrine for Health Services Support in Joint Operations. Washington, DC: Department of Defense.

Joint Chiefs of Staff. (June 1995). Joint Pub 3-07: Joint Doctrine for Military Operations Other Than War. Washington, DC: Department of Defense.

Joint Chiefs of Staff. (February 1999). Joint Pub 1-02: Department of Defense dictionary of military and associated terms. Washington, DC: Department of Defense.

Lillibridge, S.R., Burkle, F.M., & Noji, E.K. (1994). Disaster mitigation and humanitarian assistance training for uniformed service medical personnel. Military Medicine, 159, 397-403.

Massey, V.H. (1995). A study and learning tool: Nursing Research (2nd ed.). Springhouse, Pennsylvania: Springhouse Corporation.

Masters, M.L., & Masters, R.J. (1993). Building TQM into nursing management. Nursing Economics, 11, 274-278.

Mathias, J. (1992). Deming's principles applied to health care. Operating Room Manager, 8 (7), 20.

McGovern, W.N., & Rodgers, J.A. (1986). Change theory. American Journal of Nursing, 566-567.

Messacar, D.C., & Kendall, J. (1998). Guard and Reserve spouse separation during the Persian Gulf War: Coming to terms with uncertainty. Journal of Family Nursing, 4, 309-333.

Morse, J.M., & Fields, P.A. (1995). Qualitative research methods for health professionals (2nd ed.). Thousand Oaks: Sage Publications.

Munhall, P.L., & Oiler, C.J. (1988). Nursing research. A qualitative perspective. Norwalk: Appleton-Century-Crofts

Newmark, J. & France, L.O. (1998). Use of medical specialties in medical operations other than war: Lessons from Saudi Arabia. Military Medicine, 163, 278-278-282.

Olsen, J.C. (1997). Are we dancing alone? Matching operational readiness training with potential future conflict. Military Medicine, 162 (2), 75-78.

Owen, J.P., & Macmillan, A.H. (1998). J95 Health Surveillance in Multinational Division Southwest (Bosnia): July-November 1996. J R Army Medical Corp, 144, 18-23.

Rantz, M.J., & Miller, T.V. (1987). Change theory: A framework for implementing nursing diagnosis in a long-term setting. Nursing Clinics of North America, 22, 887-897.

Reed, R.J., Martino, J., Eyestone, S.M., & Pugh, W.M. (1998). The field hospital at Zagreb: Tri-service medical care in a peacekeeping operation. Military Medicine, 413-419.

Rumbaugh, J.R. (1998). Operation Pacific Haven: Humanitarian medical support for Kurdish evacuees. Military Medicine, 163, 269-271.

Ryan, M.E. (1998). Global engagement: A vision of the 21st century. In Joint Chief of Staff's, Joint Vision 2010. Washington, DC: Pentagon. Retrieved April 6, 1999 from the World Wide Web: http:// www.xp.hq.af.mil/xpx/21/nuvis/htm

Samuels, G.L. (1997). Army community health nurses' role in humanitarian relief effort, Operation Sea Signal, Guantanamo Bay, Cuba. Military Medicine, 162 (3), 190-193.

Samuels, G.L., & Sommer, M.D. (1997). The role of the community health nurse in military humanitarian operations: Lessons from Operation Sea Signal- Guantanamo Bay, Cuba. Journal of Community Health Nursing, 14, 73-79.

Selye, H. (1976). Stress in health and disease. Reading, MA.: Butterworths.

Sharp, T.W., Yip, R., & Malone, J.D. (1994). US military forces and emergency international assistance. Observations and recommendations from three recent missions. JAMA, 272, 386-390.

Smith, S.E., & Smith K.A. (1995). Perioperative perspective of a United Nations humanitarian mission. Association of Operating Room Nurses, 62, 875-883.

Strauss, A., Corbin, J. (1994). Grounded theory methodology. In Denzin, N.K., & Lincoln, Y.S. (Eds.). Handbook of qualitative research (pp. 273-285). London: Sage.

Streubert, H.J. & Carpenter, D. R. (1995). Qualitative research in nursing: Advancing the humanistic imperative. Philadelphia, PA: J.B. Lippincott Co.

Tsoulas, D. (1992). The spectrum of medical support to operation desert shield/storm. Paper presented to the Seventh Conference on Military Medicine. Uniformed Services University of the Health Sciences. Bethesda, MD.

Turner. D. M. (1998). The experience of chief nurses in military operations other than war. (Doctoral dissertation, University of Minnesota, 1998). Dissertation Abstracts International, 59-08B, 4021.

United States General Accounting Office. (1992). Operation Desert Storm: Full army medical capability not achieved, subcommittee on armed services, house of representatives. Washington, DC: U.S. Government Printing Office.

Vane, B., & Singleton, C.J. (1996). Transcultural perioperative nursing in Berlin. Association of Operating Room Nurses, 63, 533-539.

Webster, M. (1996). Websters concise reference library (Part 1). New York: Smithmark Publishers.

Wiener, S. (1986). Medical corps readiness for major conflict. Military Medicine, 151, 321-326.

Wilson, H.L. (1993). Introducing Research in Nursing. New York: Addison Wesley Nursing

Wright Patterson 74th Medical Group. (1996). Individual Deployment Handbook. Wright-Patterson Air Force Base, OH: Author.

Yates, L.A. (1997, July-August). Military stability and support operations: Analogies, patterns and recurring themes. Military Review 51-61.

Zdrodowski, C.D., Dekker, E. & Vogelsang-Watson, C.C. (1996, May-June).

Medical deployment to Croatia: Operation Provide Promise. Today's Surgical Nurse, 28-

34.

BIBLIOGRAPHY

Baker, M.S., & Ryals, P.A. (1996). Military medicine in operations other than war Part I: Use of deployable medical systems facilities to assist in urban crises and enhance reserve medical training. Military Medicine, 161, 499-501.

Best, F., & Tomich, N. (1995). Medicine in the Gulf War. Washington DC: U.S. Medicine, Inc.

Courington, F. (1988). Anesthesia at the battlefield: The present and the future. Seminars in Anesthesia, 7 (1), 26-32.

Fosburgh, L.C. (1995). Nurse anesthetists remembering a world at war- Part 1: Nurse anesthetists prepare for war 1939-1941. Journal of the American Association of Nurse Anesthetists, 63, 385-387.

Fosburgh, L.C. (1995). Nurse anesthetists remembering a world at war- Part II: My assignment as a Red Cross nurse. Journal of the American Association of Nurse Anesthetists, 63, 501-507.

Gillem, T. (1988). Deming's 14 points and hospital quality: Responding to the consumer's demand for the best value health care. Journal of Nursing Quality Assurance, 2 (3), 70-78.

Hughes, D.A., Hohner, J.A., & Jones, J. (1998). Mental health nursing support during Operation Sea Signal: Cuban/Haitian mission. Military Medicine, 163, 353-357.

Hunt, J.B. (1996, Sept-Oct). Peacekeeping operations. OOTW: A concept in flux. Military Review, 3-9.

Joint Chiefs of Staff. (1998). Joint Vision 2010. Washington, DC: Department of Defense. Retrieved Apr 3, 1999 Internet: http://www.dtic.mil/doctrine/jel/new_pubs/jpl_02.pdf

Kincheloe, J.L., & McLaren, P.L. (1994). Rethinking critical theory and qualitative research. In Denzin and Lincoln (Eds.). Handbook of qualitative research. Thousand Oaks, CA: Sage.

Martin, S.A. (1996). Applying nursing theory to the practice of nurse anesthesia. Journal of the American Association of Nurse Anesthetists, 64, 369-372.

Office of the Surgeon General. (1991). Combat casualty care guidelines: Operation Desert Storm. Washington DC: TMM Publications.

Orletsky, D.T., Vick, A., Shulsky, A.N. & Stillon, J. (1998a). The U.S. Air Force and operations other than war: Reducing current stresses and meeting future demand. Rand Research Brief. Retrieved ~January, 1999 from the World Wide Web: www.rand.org/publications/RB/RB48/

Orletsky, D.T., Vick, A., Shulsky, A.N. & Stillon, J. (1998b). Preparing the U.S. Air Force for military operations other than war. Rand Research Brief. Retrieved ~January, 1999 from the World Wide Web: www.rand.org/publications/MR/MR842

APPENDICES

Appendix A. Guiding Questions for the Interview

Appendix B. Demographic Questionnaire

Appendix C. Timeline

Appendix D. Letter to Potential Participants

Appendix E. Letter from General Stierle